On the Possible Kinds of Crack With a Conductivity Jump SOV/179-59-4-16/40

obtained. It expresses the connection between the volume v and the magnetic field strength H. It is shown that - if the structure of the discontinuity surface is investigated at $\sigma = \sigma(T)$, the conductivity σ being equal to zero, for T-values smaller than a certain T - there is only one point on the ABC-curve which depends on T^* and the initial values of the parameters, and from which the motion can be continued until ∞. This points to a certain connection between H_1 and H_2, which is not a consequence of the conservation laws, formula (1). This additional relationship, together with the conservation laws in unsteady problems, determines the intensity of the electromagnetic wave emitted, and makes the solution of such problems a unique one. There are 1 figure and 3 Soviet references.

SUBMITTED: February 19, 1959

Card 2/2

KULIKOVSKIY, A.G.; LYUBIMOV, G.A.

In connection with V.A.Belokon's article "Permanent structure of shock waves with Joule dissipation." Zhur.eksp.i teor.fiz. 37 no.4:1173-1174 O '59. (MIRA 13:5)
(Shock waves) (Belokon, V.A.)

66467

SOV/20-129-1-13/64

24(7) 10.2000(A)

AUTHORS: Kulikovskiy, A. G., Lyubimov, G. A.

TITLE: Magnetohydrodynamic Gas-ionizing Shock Waves

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 1, pp 52 - 55 (USSR)

ABSTRACT: An electromagnetic wave may move in front of a shock wave in unsteady problems, in which shock waves ionize the gas, present in an electromagnetic field. For known velocity of the gas behind the shock wave, the boundary conditions in the shock wave (expressing the continuity of the tangential component of the electric field as well as the fluxes of matter, momentum, and energy) are not sufficient to determine simultaneously the intensities of the shock wave and of the emitted electromagnetic wave. An additional relation between quantities before and behind the shock wave is furnished by the investigation of the structure of the shock waves of the above type. This relation and, in consequence, the alteration of all quantities in the shock wave depends essentially on the amount of the relations between the dissipation coefficients (viscosity, thermal conductivity, and magnetic viscosity) in the transition zone

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SOV/20-129-1-13/64

Magnetohydrodynamic Gas-ionizing Shock Waves

The electrical conductivity of the gases is considered as a function of temperature in the present paper: $\sigma=\sigma(T)$. It holds that $\sigma=0$ if $T < T^*$ and $\sigma > 0$ for $T > T^*$. The structure of a hydrodynamic shock wave, which moves in a gas at a temperature $T_1 < T^*$, was investigated by the authors. For simplicity only such cases are treated, in which only 2 dissipation coefficients, that are magnetic viscosity and molecular viscosity (or magnetic viscosity and thermal conductivity) are not equal to 0. The electric and the magnetic field are assumed to be perpendicular to each other and in parallel to the plane of the wave front. The rather extensive equations of the magnetohydrodynamics are written down for both cases and shortly explained. These differential equations fix the family of integral curves on the plane H, v (where it holds that $\sigma > 0, \nu_m \neq \infty$), H = const in the range $T < T^*$. The shock wave may be represented by solutions of such kind, which pass over into a progressive flow if $x = \pm\infty$. For these solutions all derivations converge towards as x approaches $\pm\infty$. First, a gas, which moves from $x = -\infty$, is subject to gasdynamical compression and at $T > T^*$ the gas starts to interact

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with the magnetic field. The change of the magnetic field in the wave $H_2 - H_1$ is determined by the point of intersection of the integral curve and the line $T=T^*$. This point of intersection depends on the characteristics of the incoming flow as well as on the ratio of the dissipation coefficients within the transition zone. The relation $H_1=H_1(E_1, Q_1, T_1, v_1)$ yields an additional boundary condition on the substitution of a shock wave for a steady flow. If one of the dissipation coefficients is considerably greater than the others, this additional boundary condition may be ascertained in explicit form. The width of the shock waves is defined by the greatest one of the dissipation coefficients. There are 1 figure and 5 references, 3 of which are Soviet.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute imeni V. A. Steklov of the Academy of Sciences, USSR)

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~~21 (7), 24 (3)~~ 24.2120, 10.2000(A) 66448

AUTHORS: Kulikovskiy, A. G., Lyubimov, G. A. SOV/20-129-3-14/70

TITLE: The Simplest Problems Concerning a Gas-ionizing Shock Wave in an Electromagnetic Field

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 3, pp 525-528 (USSR)

ABSTRACT: If the conductivity of the gas before the shock wave vanishes and is finite behind the shock wave, the theorems of conservation read: $\varrho_1 v_1 = \varrho_2 v_2$, $p_1 + \varrho_1 v_1^2 + (1/8\pi)H_1^2 =$

$= p_2 + \varrho_2 v_2^2 + (1/8\pi)H_2^2$, $\varrho_1 v_1\left(\frac{v_1^2}{2} + i_1\right) + (c/4\pi)E_1 H_1 =$

$= \varrho_2 v_2\left(\frac{v_2^2}{2} + i_2\right) + (c/4\pi)E_2 H_2$, $E_1 = E_2 = \frac{v_2}{c}H_2$. The electric and the magnetic field strength are, for the purpose of simplifying matters, assumed to be parallel to the wave front and perpendicular to each other. The shock waves ionizing a gas may be considered to be the limit of a certain continuous motion of a viscous heat-conducting gas, the conductivity σ of which is considered to be a known

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SOV/20-129-3-14/70

The Simplest Problems Concerning a Gas-ionizing Shock Wave in an Electromagnetic Field

function of the temperature T ($T < T^*$, $\sigma > 0$ at $T > T^*$). This as well as other facts mentioned here indicate the following: The solution of problems concerning ionizing shock waves will differ from the solutions of the corresponding problems in gasdynamics and magnetogasdynamics. This difference exists not only in the electromagnetic wave, but also in the variation of the gas-dynamical parameters of the motion. In gas-ionizing shock waves compression is not higher than in gas-dynamic shock waves and not less than in magnetogasdynamic shock waves which have the same parameters of the incoming flow and the same magnetic field strength before the discontinuity. Also the other quantities behind the gas-ionizing shock wave attain values which are between the corresponding values behind the gas-dynamic shock wave and a magnetogasdynamic shock wave. In the first part of the present paper the problem of the motion of a plane piston is dealt with. In this case the presence of an electromagnetic field increases the velocity of the shock wave and reduces the compression in it compared to the gasdynamic solution at the same piston velocity. The second part deals with the flow

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The Simplest Problems Concerning a Gas-ionizing Shock Wave in an Electromagnetic Field

round a wedge. The velocity component which is tangential with respect to the shock wave remains conserved during passage through the shock wave, and the variations of normal velocity and of the other quantities may be dealt with in the same manner as in the first part. A surface charge must exist on the shock wave. There are 2 figures and 3 Soviet references.

PRESENTED: July 14, 1959, by L. I. Sedov, Academician

SUBMITTED: July 7, 1959

Card 3/3

KULIKOVSKIY, A.G. and LYUBIMOV, G.A.

"On Gas-Ionizing Magnetohydrodynamic Shock Waves."

report presented at the Intl Symposium on Magneto-Fluid Dynamics, 17-24 Jan 1960, Wash.,D.C.
Comments - B 3, 151,585,24 Feb 60.

KULIKOVSKIY, A. G., STANYUKOVICH, K. P., GOLITSYN, G. S. (Moscow)

"Magnetohydrodynamics (Review)."

report presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

89394
S/040/61/025/001/013/022
B125/B204

10.8000
21.2311

AUTHORS: Kulikovskiy, A. G., Lyubimov, G. A. (Moscow)

TITLE: The structure of an inclined magnetohydrodynamic shock wave

PERIODICAL: Prikladnaya matematika i mekhanika, v. 25, no. 1, 1961, 125-131

TEXT: The present paper investigates the flow within the zone of the shock wave when the dissipation of energy in the wave is caused by magnetic viscosity and by the second kinematic viscosity. In the problem of the structure of a magnetohydrodynamic shock wave, the solutions of the equations of the magnetohydrodynamics of a non-perfect gas are to be determined, whose values with x = $\pm\infty$ satisfy the known laws of conservation. If only the magnetic viscosity and the second viscosity are non-vanishing, the equations of the steady onedimensional flows of a perfect gas read

$$\nu_m \frac{dH}{dx} = uH - vH_n + cE, \qquad \mu \frac{du}{dx} = p + \rho u^2 + \frac{1}{8\pi} H^2 - J_1$$
$$\rho uv - \frac{1}{4\pi} H_n H = J_2, \qquad \rho u = M, \qquad H_n = \text{const} \tag{1}$$
$$\rho u \left[\frac{\gamma}{\gamma - 1} \frac{p}{\rho} + \frac{1}{2}(u^2 + v^2)\right] - \frac{cEH}{4\pi} = U$$

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They refer to a system of coordinates, in which the flow is plane. H_n, H, u, v are the components of the magnetic field and of the velocity along the x- and y-axis, E - the z-component of the electric field, c - velocity of light; J_1, J_2 - the fluxes of the x- and y-components of the momentum, U - the energy flux, M - the mass flux. With the dimensionless variables $u = u_0\tau$, $v = u_0 q$, $p = \varrho_0 u_0^2 \theta$, $H = \sqrt{4\pi\varrho_0 u_0^2}\,h$ (2) one obtains

$$\frac{\nu_m}{u_0}\frac{dh}{dx} = h(\tau - h_n^2) - e, \qquad \frac{\mu}{\rho_0 u_0}\frac{d\tau}{dx} = \theta + \tau + \tfrac{1}{2}h^2 - P \qquad (3).$$

$$q - h_n h = 0, \qquad k\theta\tau + \tfrac{1}{2}\tau^2 + \tfrac{1}{2}h_n^2 h^2 + eh = \varepsilon$$

$$\left(k = \frac{\gamma}{\gamma - 1},\ h_n = \frac{H_n}{\sqrt{4\pi\rho_0 u_0^2}},\ e = -\frac{cE}{\sqrt{4\pi\rho_0 u_0^2}};\ P = \frac{J_1}{\rho_0 u_0^2},\ \varepsilon = \frac{U}{\rho_0 u_0^3}\right)_0 .$$

Furthermore, $e = h_0(1-h_n^2)$, $P = 1 + \theta_0 + \frac{1}{2}h_0^2$, $\varepsilon = k\theta_0 + \frac{1}{2} + h_0^2(1 - \frac{1}{2}h_n^2)$ holds. Besides, everywhere $e > 0$ is assumed. For reasons of simplicity, here $\gamma < 2$ is assumed. The real points of the isoclinal line $d\tau/dx = 0$

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are on both sides of the hyperbola $h = e/(k\tau - h_n^2)$. The maxima and minima of the isoclinal line are on this hyperbola on such points τ, where the discriminant of $h^2(k\tau-h_n^2) - 2eh + (2k-1)\tau^2 - 2kP\tau + 2\varepsilon = 0$ (6) is equal to zero. The isoclinal line $d\tau/dx = 0$ has the asymptote $\tau = h_n^2/k$. With increasing α the roots of $D(\tau) = 2\alpha(P-1)\left[(1-kh_n^2)+k(h_n^2+k-2)\tau\right]-(k\tau-h_n^2)\left[(2k-1)\tau^2 -2kP\tau + 2k(P-1)+1\right]$ change monotonically. In the plane of the variables $P - 1 = \frac{1}{2}h_o^2 + \theta_o$ and h_n^2, there is a curve which separates the domain of existence of the three roots of the discriminant from that of a single root with $\theta_o = 0$ ($\alpha = 1$) (see Fig.1, curve ABCD). The curve ECF illustrating the equation $\tau = \tau_*$ touches the curve ABCD at the point C. To the left of ABCF, the discriminant has three roots with small α, and with large α it has one root. For the remaining points of the variable $P-1, h_n^2$, the discriminant, with small and large α, has three roots, but with intermediary values of α, it has one single root. Case a): In the

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case of points lying simultaneously below the straight line $\tau_1 = h_2^2/k$ and $h_n^2/k = 1$, two roots of the discriminant are greater than h_n^2/k, and one is smaller than h_n^2/k. Case b): In all other cases with three roots, one root is greater than h_n^2/k, and the two others are smaller. These properties permit the construction of the isoclinal line. For points above the straight line $\tau = h_n^2$, the velocity is greater than Alfvèn velocity $a_A = H_n/\sqrt{4\pi\varrho_0}$, and for points below this straight line it is smaller than Alfvèn velocity. To the states before and behind the shock wave there correspond the points of intersection of the isoclinal lines (6) and (8). To the solution of the problem of the structure of the shock wave, there corresponds the integral curve of the Eq. (9)

$$\frac{d\tau}{dh} = \frac{h^2(k\tau - h_n^2) - 2eh + (2k-1)\tau^2 - 2kP\tau + 2\varepsilon}{2k\tau\left[h(\tau - h_n^2) - e\right]}$$, which connects the singular

points lying in the region $\tau > 0$. With continually decreasing velocity, the following singular points are possible: 1) Nodes, 2) saddle, 3) saddle, 4) nodes, into which the integral curves lead. If the curves (6) $h^2(k\tau - h_n^2) - 2eh + (2k-1)\tau^2 - 2kP\tau + 2\varepsilon = 0$ have the shape indicated in Figs.2 and 4, then all singular points lie on the same branch of the curve (6). In Figs. 5 and 7 $\mu/\varrho_0\nu_m$ is either small or large, respectively. In Fig.6, the single value of $\mu/\varrho_0\nu_m$, at which the integral curve emerging from point 2 runs into point 3, corresponds to the value of $(\mu/\varrho_0\nu_m)_*$. The fast and the slow waves thus have a structure with an arbitrary ratio of dissipative coefficients. In four singular points the structure may also have intermediary shock waves. The transition $2 \rightarrow 3$ is possible only in the case of $\frac{\mu}{\varrho_0'\nu_m} = \left(\frac{\mu}{\varrho_0\nu_m}\right)_*$, the transitions $1 \rightarrow 3$ and $2 \rightarrow 4$ exist and are unique with $\frac{\mu}{\varrho_0'\nu_m} > \left(\frac{\mu}{\varrho_0'\nu_m}\right)_*$, and the transition $1 \rightarrow 4$ is possible with $\frac{\mu}{\varrho_0'\nu_m} > \left(\frac{\mu}{\varrho_0\nu_m}\right)_*$,

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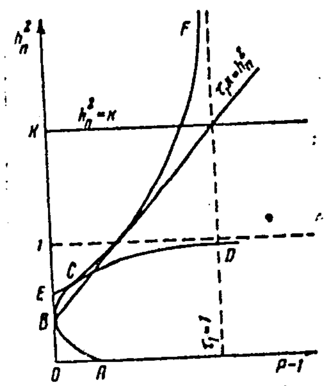
and may also occur on an infinite number of integral curves. The structure of the "evolution" shock waves (in the sense of A. I. Akhiyezer et al.) differs from the structure of the non-evolution shock waves by the fact that only they have a structure at any ratio between the dissipative coefficients. A. N. Voynov is mentioned. There are 7 figures and 4 references: 2 Soviet-bloc and 3 non-Soviet-bloc.

SUBMITTED: July 16, 1960

Fig. 1



Фиг. 1

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S/020/61/137/004/010/031
B104/B206

AUTHOR: Kulikovskiy, A. G.

TITLE: Structure of slow magneto-hydrodynamic shock waves under barotropic conditions

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 4, 1961, 810-813

TEXT: In a study of the structure of shock waves Germain (Ref. 2: P. Germain, Office National d'Etudes et de Recherches Aéronautiques, Publ. No. 97 (1959)) showed that in four common equations which describe the one-dimensional steady motion of a gas, no more than four singular points S_1, S_2, S_3 and S_4 exist. (They are arranged according to increasing density in the points). He studied the behavior of integral curves in the vicinity of these singular points and was able to show that a single integral curve always exists, which realizes the transition $S_1 \longrightarrow S_2$ corresponding to a fast shock wave. Under assumption of barotropy, it is shown that slow waves always have a structure, i.e., the points S_3 and S_4 are connected by a single integral curve at arbitrary dissipative

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coefficients (viscosity, thermal conductivity, and magnetic viscosity). The assumption of barotropy is similar to that which traces the problem back to the finding of integral curves in the three-dimensional, but for this some singularities of the four-dimensional case remain. The equations which describe the one-dimensional steady motion of a barotropic medium along the x-axis, are:

$$\frac{\nu_m}{4\pi}\frac{\partial H}{dx} = M\left(\frac{HV}{4\pi} - H_0^* v + E^*\right) \equiv F_H,$$

$$m_2\frac{dv}{dx} = M(v - H_0^* H) \equiv F_v, \qquad (4)$$

$$m_1 M_2 \frac{dV}{dx} = M\left[p(V) + M^2 V + \frac{H^2}{8\pi} - P\right] \equiv F_V,$$

M is the mass flow, P the x component of the pulse, H and v are the field intensity- and velocity components along the y axis. All surfaces are studied which are obtained by equating to zero the Eqs. (4). The surface $F_v = 0$ is represented by the surface $v = H_0^* H$ ($H_0^* = H_x/4\pi M$ = const) which passes through the V axis. The surface $F_V = 0$ is a cylindrical surface parallel to the v axis. The intersection of $F_H = 0$ with the surface

Structure of slow magneto-hydrodynamic...

v = const is a hyperbola. These surfaces divide the space $H > 0$, $v > 0$ and $V > 0$ into domains. Under the sets I - VIII the inequalities

$$\begin{array}{ll} \text{I. } F_H > 0,\ F_v > 0,\ F_V > 0. & \text{V. } F_H < 0,\ F_v > 0,\ F_V > 0. \\ \text{II. } F_H > 0,\ F_v > 0,\ F_V < 0. & \text{VI. } F_H < 0,\ F_v > 0,\ F_V < 0. \\ \text{III. } F_H > 0,\ F_v < 0,\ F_V > 0. & \text{VII. } F_H < 0,\ F_v < 0,\ F_V > 0. \\ \text{IV. } F_H > 0,\ F_v < 0,\ F_V < 0. & \text{VIII. } F_H < 0,\ F_v < 0,\ F_V < 0. \end{array} \quad (A)$$

are understood. The sets II - VIII consist of domains, the set I of two domains I_1 and I_2. In I_1 lies point S_3, in I_2 point S_4. It is investigated how the boundaries of the domains I - VIII are intersected by the integral curves and how the integral curves behave in the vicinity of the singular points of (4). It is assumed thereby that the integral curve coming from S_3 forms the surface $\sum_1$ and that coming from S_4, the surface $\sum_2$. It then follows that 1) the surface $\sum_1$ passes the domains I, III, IV, VIII and VI in the vicinity of S_3 and has no points in II and VII. 2) The surface $\sum_1(V = V_1(H,v))$ satisfies in point S_3 the condition $\partial V_1/\partial H > 0$. 3) The surface $\sum_2$ passes the domains VII, IV, and VII in the

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vicinity of S_4 and has no points in the domains III and V + VI. 4) The surface Σ_2 ($V = V_2(H, v)$) satisfies in point S_4 the condition $\partial V_2/\partial H < 0$. Based on these results, the author proves the fact that one, and only one curve exists which connects S_3 and S_4. There are 1 figure and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute imeni V. A. Steklov of the Academy of Sciences USSR)

PRESENTED: November 1, 1960, by L. I. Sedov, Academician

SUBMITTED: October 22, 1960

Card 4/4

PHASE I BOOK EXPLOITATION SOV/6191

Kulikovskiy, Andrey Gennadiyevich, and Grigoriy Aleksandrovich Lyubimov

Magnitnaya gidrodinamika (Magnetohydrodynamics). Moscow, Fizmatgiz, 1962. 246 p. 7500 copies printed.

Ed.: V. P. Korobeynikov; Tech. Ed.: K. F. Brudno.

PURPOSE: This book is intended for persons working in the field of magnetohydrodynamics.

COVERAGE: The book contains systematized basic principles of magnetohydrodynamics, presents relationships resulting from interaction of a conducting medium with an electromagnetic field, and investigates the possibility of obtaining exact solutions for magnetohydrodynamic equations. The author thanks M. N. Kogan and V. P. Korobeynikov for their advice. There are 134 references, about two-thirds of them Soviet.

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A.G. Kulikovskiy

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PHASE I BOOK EXPLOITATION SOV/6201

Vsesoyuznyy s"yezd po teoreticheskoy i prikladnoy mekhanike. 1st, Moscow, 1960.

Trudy Vsesoyuznogo s"yezda po teoreticheskoy i prikladnoy mekhanike, 27 yanvarya -- 3 fevralya 1960 g. Obzornyye doklady (Transactions of the All-Union Congress on Theoretical and Applied Mechanics, 27 January to 3 February 1960. Summary Reports). Moscow, Izd-vo AN SSSR, 1962. 467 p. 3000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Natsional'nyy komitet SSSR po teoreticheskoy i prikladnoy mekhanike.

Editorial Board: L. I. Sedov, Chairman; V. V. Sokolovskiy, Deputy Chairman; G. S. Shapiro, Scientific Secretary; G. Yu. Dzhanelidze, S. V. Kalinin, L. G. Loytsyanskiy, A. I. Lur'ye, G. K. Mikhaylov, G. I. Petrov, and V. V. Rumyantsev; Resp. Ed.: L. I. Sedov; Ed. of Publishing House: A. G. Chakhirev; Tech. Ed.: R. A. Zamarayeva.

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Transactions of the All-Union Congress (Cont.) SOV/6201

PURPOSE: This book is intended for scientific and engineering personnel who are interested in recent work in theoretical and applied mechanics.

COVERAGE: The articles included in these transactions are arranged by general subject matter under the following heads: general and applied mechanics (5 papers), fluid mechanics (10 papers), and the mechanics of rigid bodies (8 papers). Besides the organizational personnel of the congress, no personalities are mentioned. Six of the papers in the present collection have no references; the remaining 17 contain approximately 1400 references in Russian, Ukrainian, English, German, Czechoslovak, Rumanian, French, Italian, and Dutch.

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36036
S/040/62/026/002/008/025
D299/D301

10.2000

AUTHOR: Kulikovskiy, A.G. (Moscow)

TITLE: On the structure of magnetohydrodynamic shock in arbitrary dissipative systems

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 2, 1962, 273 - 279

TEXT: One-dimensional stationary flow of a viscous heat-conducting gas with finite electrical conductivity is considered. It is shown that under certain conditions with regard to the equation of state, there exist flows which have the structure of fast- and slow shocks of moderate amplitude. For the fast shock waves, such a flow is unique. The dissipative processes are described by means of Onsager's principle. The entropy flow is

$$P = \frac{Q}{T} + mS = \frac{m}{T}\left[\frac{H_y^2 V}{8\pi} + \frac{H_z^2 V}{8\pi} + \frac{m^2V^2}{2} + \frac{v^2}{2} + \frac{w}{2} - f(V, T) - H_0H_yv - H_0H_zw - JV + \varepsilon\right] \quad (2)$$

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where f is the mass density of free energy; J - the flow of the x-th momentum-component; ε - the energy flow divided by m. By Onsager's principle

$$\frac{d_i S}{dt} = \sum_i J_i X_i, \qquad (4)$$

where J_i are generalized flows and X_i - generalized forces. It is assumed that the J_i are linear functions of X_i so that the quadratic form D is non-negative for any $\dot{q}_k$. The system of equations

$$\sum_j L_{ij} \dot{q}_j = \frac{\partial P}{\partial q_i} \qquad (6)$$

is obtained. The solution to the shock-wave problem is represented by the integral curve of system (6) which connects the singular points of the system and is found in q_i-space. The behavior of the integral curves of system (6) in the neighborhood of the singular points A_α is determined by the linearized system of equations, ob-

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On the structure of magnetohydro-...

tained on introducing in the right-hand side of (6) the principal part of the difference $P(q_i) - P(A_\alpha)$. As the system under consideration is dissipative in the sense of G.Ya. Lyubarskiy (Ref. 10: O strukture udarnykh voln. PMM, v. 25, no. 6), it follows (by virtue of the results of Ref. 10) that out of 6 eigenvalues of the linearized system, $7-\alpha$ have positive real part, and $\alpha-1$ have negative real part. Thus, to each singular point A_α corresponds a $(7-\alpha)$-dimensional surface consisting of integral curves, originating from that point, and a $(\alpha-1)$-dimensional surface consisting of integral curves, terminating in it. The existence and uniqueness of solutions which have the structure of fast shocks, is proved. With respect to the structure of slow shocks, it is proved that there exists at least one integral curve, connecting the 2 singular points A_3 and A_4. There are 11 references: 8 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: G.S.S. Ludford, The structure of hydromagnetic shock in steady plane motion. Journal Fluid Mechn. v. 5, no. 1, 1959; Z.O. Bleviss, A study of the structure of the magnetodynamic switch-on

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D299/D301

On the structure of magnetohydro- ...

shock in steady plane motion. Journal Fluid Mechn. v. 9, no. 1, 1961.

SUBMITTED: December 15, 1961

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40116

S/040/62/026/004/012/013
D409/D301

24.2120
26.1410

AUTHORS: Kulikovskiy, A.G., and Lyubimov, G.A. (Moscow)

TITLE: On magnetohydrodynamic shock-wave structure in a gas with anisotropic conductivity

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 4, 1962 791 - 792

TEXT: In the references (A.G. Kulikovskiy, O strukture udarnykh voln, PMM, this issue) it is shown that the width (thickness) of a shock-wave in a non-ideal medium may not vanish when all the dissipation coefficients tend to zero. Below, such a shock wave is constructed. Ohm's generalized law is used in the following form:

$$cE + v \times H + \frac{c}{ne} \operatorname{grad} p_e = \frac{c}{\sigma} j + \frac{c}{\sigma} \frac{\omega\tau}{H} j \times H.$$

The equations for one-dimensional steady flow are set up. The matrix of the dissipation coefficients ν_m^* and $\varkappa\nu_m^*$ is denoted by L_{ij}. One obtains for the width of the shock wave

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S/040/62/026/004/012/013
D409/D301

On magnetohydrodynamic shock-wave ...

$$1 \sim \nu_m^* (1 + \varkappa^2) U^{-1},$$

where U is a characteristic velocity. This expression shows that if the dissipation coefficients tend to zero, the width of the shock wave behaves as follows

$$1 \rightarrow 0, \text{ if } \nu_m^* \varkappa^2 \rightarrow 0; \; 1 \not\rightarrow 0, \text{ if } \nu_m^* \varkappa^2 \not\rightarrow 0.$$

The latter case occurs only if $\omega\tau \rightarrow \infty$. With large $\omega\tau$, the solution of the shock-structure problem is periodic; the width of a period is of the order of $U\varkappa\nu_m^*$, and approaches zero if the dissipation coefficients approach zero. A formula is given for the rate of increase of the entropy dP/dx. If $\nu_m^* \rightarrow 0$, and $\nu_m^*\varkappa$ remains finite, then $dP/dx \rightarrow 0$, and $1 \rightarrow \infty$. Thereby, the solution approaches a periodic solution on any finite interval $[x_1, x_2]$, and the entropy does not increase on this interval. Such a solution can be considered as a macroscopic analogue of the corresponding solution for a plasma in the absence of dissipation.

SUBMITTED: May 16, 1962

Card 2/2

IORDANSKIY, S.V.; KULIKOVSKIY, A.G.

Stability of higher correlation functions in a plasma. Dokl. AN SSSR 152 no.4:849-852 O '63. (MIRA 16:11)

1. Matematicheskiy institut im. V.A. Steklova AN SSSR. Predstavleno akademikom L.I. Sedovym.

BARMIN, A.A.; KULIKOVSKIY, A.G.; LOBANOVA, L.F. (Moscow)

"Linearized problem of supersonic flow at the entry of the MHD-generator"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

S/0056/64/046/002/0732/0744

ACCESSION NR: AP4019243

AUTHORS: Iordanskiy, S. V.; Kulikovskiy, A. G.

TITLE: A quasilinear approximation and the correlation functions for a plasma

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 732-744

TOPIC TAGS: plasma, correlation function, Langmuir plasma wave, plasma instability, higher correlation function, first distribution function, nonlinear interaction, quasilinear approximation

ABSTRACT: A completely ionized spatially-homogeneous plasma without a magnetic field is considered, when the usual expressions for the correlation functions in the plasma are unstable against the occurrence of Langmuir plasma waves. The purpose is to obtain expressions for the second correlation function, since it determines the variation of the first distribution functions. A new method is

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therefore used to solve the equations for the higher correlation functions, based on a simple representation of the corresponding Green's functions. Approximate expressions for the correlation functions, with allowance for nonlinear interactions, are obtained for small instability increments. It is shown that the quasilinear approximation is odd only in the case when the instability is contained in a sufficiently small region of phase velocities of the waves. The necessary condition for the applicability of the equations of the quasilinear approximation for large time intervals is shown to be smallness of the increments and also smallness of the relative velocity increment. "The authors are grateful to N. N. Bogolyubov and Yu. L. Klimontovich for a discussion of questions connected with this work." Orig. art. has: 34 formulas.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova AN SSSR (Mathematics Institute, AN SSSR)

IORDANSKIY, S.V.; KULIKOVSKIY, A.G.

Quasi-linear approximation and the correlation functions in a plasma. Zhur. eksp. i teor. fiz. 46 no.2:732-744 F '64. (MIRA 17:9)

1. Matematicheskiy institut AN SSSR.

L 5390-66 EWP(m)/EPA(w)-2/EWT(1)/T-2/EPA(sp)-2/EWA(m)-2 IJP(c)

ACC NR: AP5027268 SOURCE CODE: UR/0207/65/000/005/0034/0039

AUTHORS: Kulikovskiy, A. G. (Moscow); Regirer, S. A. (Moscow) 44,55 44,55

71
B

ORG: none

TITLE: On the effect of walls on overheat instability in a magnetohydrodynamic channel 1,44,55

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1965, 34-39

TOPIC TAGS: magnetohydrodynamic heating, MHD instability, temperature distribution, electric field, stability criterion, plasma flow, electric conductivity

ABSTRACT: The stability of the temperature field in a plane electric discharge channel is studied analytically, using simplifying assumptions. The plasma flow is assumed to be incompressible, moving at a constant velocity U, and bounded by two electrodes $y = \pm L$ at constant temperature and electric potential. The undisturbed temperature field is represented by the equation

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$$\frac{d^2T_0}{dy^2} = -\frac{\alpha^2}{\sigma}, \quad T_0(\pm 1) = T_w, \quad \alpha^2 = \alpha_0^2\left(\int_{-1}^{1}\frac{dy}{\sigma}\right)^{-2}$$

and the linearised equations for the perturbed temperature by

$$\frac{\partial T}{\partial t} = \triangle T + 2\frac{\partial f}{\partial y} + \alpha^2 \frac{T}{\sigma^2}\frac{d\sigma}{dT}, \qquad T(\pm 1) = 0$$

$$\frac{\partial}{\partial x}\left(\sigma\frac{\partial f}{\partial x}\right) + \frac{\partial}{\partial y}\left(\sigma\frac{\partial f}{\partial y} + \alpha^2\frac{T}{\sigma}\frac{d\sigma}{dt}\right) = 0, \qquad f(\pm 1) = 0$$

where

$$t' = \frac{t}{\rho c_v L^2}, \quad y' = \frac{y}{L}, \quad x' = \frac{x}{L}, \quad f = \varphi\frac{jL}{\varkappa T^*}, \quad T' = \frac{T}{T^*},$$

$$T_0' = \frac{T_0}{T^*}, \quad \alpha^2 = \frac{j^2L^2}{\varkappa T^*\sigma^*}, \quad \sigma' = \frac{\sigma}{\sigma^*}, \quad \alpha_0^2 = \frac{4\varphi_0^2\sigma^*}{\varkappa T^*}.$$

In the above equations it is assumed that the conductivity depends on the unperturbed temperature T_0 only. The particular solution for these equations is postulated by the temperature and electric potential functions

$$T = \theta(y)e^{i(kx-\lambda t)}, \qquad f = \psi(y)e^{i(kx-\lambda t)}.$$

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For large values of the wavelength λ a self-adjoint equation is obtained for the perturbed temperature field under the condition that the electric conductivity must be represented by

$$\sigma(T) = Ae^{\beta T} \qquad (A, \beta = \text{const})$$

or

$$\sigma(T) = \frac{\alpha^2}{\beta^2}\frac{1}{B-T} \qquad (B, \beta = \text{const}).$$

The first of these leads to the following stability criteria. The transition to an unstable condition is connected with a bifurcation in the solution of the unperturbed temperature field equation. This point of bifurcation corresponds to the point of maximum of the function $\alpha_0(T_m)$ which exists for $\beta > 0$ but is absent when $\beta \leqslant 0$. The second conductivity law leads to the following transcendental equation

$$\frac{\operatorname{tg}\alpha}{\alpha} = \frac{3\beta^2 + \alpha^2}{2\beta^3}\operatorname{th}\beta$$

whose roots indicate that the temperature field remains stable to large wavelength oscillations. This is also true for short wavelength perturbations if $k \geqslant 0$. Orig. art. has: 30 equations.

SUB CODE: EM, ME SUBM DATE: 25Jun65/ ORIG REF: 003/ OTH REF: 004

Card 3/3

L 2802-66 EWT(1)/EWP(m)/EWA(d)/FCS(k)/EWA(1) WW

ACCESSION NR: AP5021296 UR/0040/65/029/004/0609/0615

AUTHORS: Barmin, A. A. (Moscow); Kulikovskiy, A. G. (Moscow); Lobanova, L. F. (Moscow)

TITLE: Linearized problem on supersonic flow at the inlet into an electrode zone of a magnetohydrodynamic channel

SOURCE: Prikladnaya matematika i mekhanika, v. 29, no. 4, 1965, 609-615

TOPIC TAGS: supersonic flow, supersonic gas flow, magnetohydrodynamics, two dimensional flow

ABSTRACT: The effect of an electromagnetic field on supersonic flow of a gas is studied. The problem is visualized as being linear, and the magnetic field is given and variable along the length of the channel. The problem is one of stationary two-dimensional supersonic flow of a gas in a flat channel $-a < y < a$, $-\infty < x < \infty$. The channel walls serve as insulators for $x < 0$ and as conductors for $x > 0$. The gas is ideal with constant conductivity σ, obeying Ohm's Law in the form

$$\mathbf{j} = \sigma\left(\mathbf{E} + \frac{\mathbf{v}}{c} \times \mathbf{H}\right).$$

Additional parameters are the magnetic Reynolds number and the interaction parameter

$$R_m = \frac{4\pi\sigma U a}{c^2}, \qquad N = \frac{\sigma H_0^2 a}{\rho U c^2},$$

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ACCESSION NR: AP5021296

and the magnetic field is described by

$$\mathbf{H} = H(x)\,\mathbf{e}_z, \qquad H(x) = \begin{cases} H_0 & \text{при } x > 0 \\ H_0 (k^2+1) e^{\pi x/a} (1 + k^2 e^{\pi x/a})^{-1} & \text{for } x < 0 \end{cases}$$

where e_x is a unit vector perpendicular to the plane of flow, and k is a parameter characterizing the magnetic field profile. Some dimensionless parameters are defined for computational use in calculating the electric field. These parameters are incorporated into the linearized hydrodynamics equations. The dimensionless potential parameter is differentiated with respect to the coordinate variables. A plot is made of the electrical current field and its dissipation along coordinate directions of the channel. A numerical solution is set up for an orthogonal grid of coordinate points. Computations were carried out on a Strela computer for various combinations of parameter values. The computed values are plotted and compared in cross-referenced parametric plots. The authors identify a point where a steady state condition prevails and the two dimensional approach may be dropped in favor of the simpler one dimensional problem. Orig. art. has: 8 equations and 7 figures.

ASSOCIATION: none

SUBMITTED: 17Nov64 ENCL: 00 SUB CODE: ME

NO REF SOV: 002 OTHER: 001

Card 2/2

L 12792-66 EWT(1)/EWP(m)/EWA(d)/T-2/EWA(m)-2/ETC(m)/...

ACC NR: AP5026626 SOURCE CODE: UR/0056/65/049/004/1326/1331

AUTHORS: Iordanskiy, S. V.; Kulikovskiy, A. G.

ORG: Mathematics Institute, Academy of Sciences SSSR (Matematicheskiy institut Akademii nauk SSSR)

TITLE: On the absolute stability of some plane parallel flows at high Reynolds numbers

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 4, 1965, 1326-1331

TOPIC TAGS: Reynolds number, motion stability, boundary layer stability, viscous flow, viscous fluid, magnetohydrodynamics

ABSTRACT: Localized disturbances in the plane parallel flow of a viscous fluid are considered and the character of their instability is investigated. The localized disturbance is represented by a Fourier integral with respect to the wave number k and the behavior of the individual terms of the series is analyzed. It is shown that the localized disturbances attenuate in the course of time in any finite arbitrary region of the flow in question. The Reynolds numbers are assumed to be high enough so that k can be regarded as small for velocity profiles without

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ACC NR: AP5026626

3

inflection points. Inflection points, if they occur, are assumed to be close to the wall, so that the instability interval lies entirely in the region of small k. Under these conditions all plane parallel flows having sufficiently small values of k on the neutral curve are absolutely stable. If the Reynolds numbers are such that k on the neutral curve becomes of the order of unity, no analytic proof of either absolute stability or absolute instability can be obtained. The result can be used in magnetohydrodynamics for plane parallel flow in a transverse magnetic field. Orig. art. has: 15 formulas.

SUB CODE: 20/ SUBM DATE: 21May65/ NR REF SOV: 003/ OTH REF: 008

HW

Card 2/2

L 23443-66 EWT(d) IJP(c)

ACC NR: AP6007583 SOURCE CODE: UR/0040/66/030/001/0148/0153

AUTHOR: Kulikovskiy, A. G. (Moscow)

47
46
B

ORG: none

16,44,55

TITLE: On the stability of homogeneous states

SOURCE: Prikladnaya matematika i mekhanika, v. 30, no. 1, 1966, 148-153

TOPIC TAGS: stability criterion, homogeneous fluid, plasma stability, complex function

ABSTRACT: Consider the linear system

$$\sum_{j=1}^{n} P_{ij}\left(\frac{\partial}{\partial t}, \frac{\partial}{\partial x}\right) u_j = 0 \qquad (i, j = 1, \ldots, n)$$

with homogeneous boundary conditions

$$\sum_{j=1}^{n}\left[B_{\alpha j}\left(\frac{\partial}{\partial t}, \frac{\partial}{\partial x}\right) u_j(t, x)\right]_{x=-L} = 0, \qquad \sum_{j=1}^{n}\left[B_{\beta j}\left(\frac{\partial}{\partial t}, \frac{\partial}{\partial x}\right) u_j(t, x)\right]_{x=L} = 0.$$

To show that this leads to a stable homogeneous system independent of time, the boundaries of the system, $x = \pm L$, are assumed to be far apart. It can be shown that for very large L there exist two nontrivial solutions to the boundary value problem. One of these constitutes a one-sided solution in which the complex frequency ω is determined from boundary conditions on one side only, the other is a "global" solution analogous to the quasi-classical solution in which ω is independent of the boundary

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ACC NR: AP6007583

conditions. For the global (or universal) instability, the frequency is obtained from the solution

$$\mathrm{Im}\,\omega > 0,\ \mathrm{Im}\,k(\omega) = 0 .$$

A connection is then established between global instabilities and absolute instabilities (the unbounded problem). The author sincerely thanks S. V. Iordanskiy for evaluating the subjects touched upon in this work. Orig. art. has: 14 equations.

SUB CODE: 12, 20 SUBM DATE: 16Oct65/ ORIG REF: 006/ OTH REF: 002

Card 2/2 hv

IORDANSKIY, S. V.; KULIKOVSKIY, A. G.

General condition for the stability of higher correlation functions in a plasma. Dokl. AN SSSR 156 no. 1:35-37 My '64.
(MIRA 17:5)

1. Predstavleno akademikom L. I. Sedovym.

ACCESSION NR: AP4018433 S/0179/64/000/001/0141/0142

AUTHOR: Baranov, V. B. (Moscow); Kulikovskiy, A. G. (Moscow); Lyubimov, G. A. (Moscow)

TITLE: The boundary layer on a flat plate in anisotropic magnetohydrodynamics

SOURCE: AN SSSR. Izv. Otd. tekh. nauk. Mekhanika i mashinostroyeniye, no. 1, 1964, 141-142

TOPIC TAGS: flat plate, boundary layer, boundary layer condition, thermal boundary layer, Ettingshausen effect, aerodynamics

ABSTRACT: Expanding the subject of a previous report (Baranov, V. B., Izv, AN SSSR, OTN, Mekhanika i mashinostroyeniye, 1962, No. 6), the authors consider disturbances to an external flow caused by a boundary layer to show that temperature at the latter's boundary can be considered fixed despite the presence of the Ettingshausen effect. Further, it is shown that the inequality $M \lesssim R$ (where M is Hartman's number, R is Reynold's number, as related to the characteristic length l along the plate) can be diminished and the form $M \lesssim R$ can be used for the existence of the Blasius velocity profile. The thermal boundary layer is

ACCESSION NR: AP4018433

calculated with consideration of Ettingshausen's effect (see Fig. 1 in the Enclosure). "In conclusion, the authors express gratitude to M. N. Kogan for calling their attention to the problem and participating in evaluation of possible solutions". Orig. art. has: 1 figure and 10 formulas.

ASSOCIATION: none

SUBMITTED: 24Sep63 ATD PRESS: 3046 ENCL: 01

SUB CODE: ME NO REF SOV: 003 OTHER: 000

ACCESSION NR: AP4018433 ENCLOSURE: 01

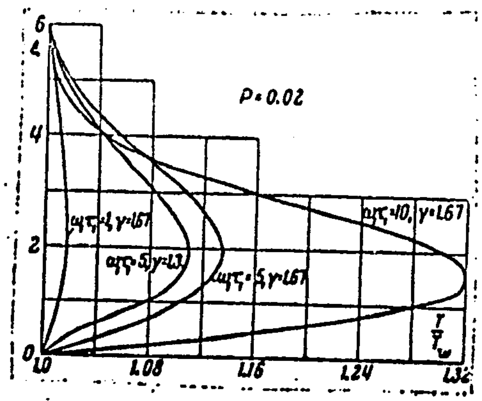

Fig. 1. Results of calculations

Card 3/3

KULIKOVSKIY, A. G.

"Material on the vascular pathology of the brain in endocarditis patients." Kiev Order of Labor Red Banner Medical Inst imeni Academician A. A. Bogomolets. Kiev. 1956. (Dissertations for the Degree of Candidate in Medical Science)

So: Knizhaya letopis', No. 16, 1956

KULIKOVSKIY, A.G.; kand.med.nauk (Kiyev)

Positive serological syphilis tests in endocarditis patients.
Vrach.delo supplement '57:43-44 (MIRA 11:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut klinicheskoy meditsiny imeni akad. N.D.Strazhesko.
(SYPHILIS) (ENDOCARDITIS)

KULIKOVSKIY, A.G., kandidat meditsinskikh nauk (Kiyev)

Cerebral hemorrhages in endocarditis. Vrach.delo no.7:685-687 Jl '57.
(MIRA 10:8)

1. Ukrainskiy nauchno-issledovatel'skiy institut klinicheskoy meditsiny im. akad. N.D.Strazhesko
(ENDOCARDITIS) (BRAIN--HEMORRHAGE)

KULIKOVSKIY, A.G., kand.med.nauk (Kiyev)

Abdominal syndrome of rheumatic fever origin. Vrach.delo no.6:639-641 Je '59. (MIRA 12:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut klinicheskoy meditsiny im. akad. N.D. Strazhesko.
(RHEUMATIC FEVER) (ABDOMEN--DISEASES)

KULIKOVSKIY, A.G., kand.med.nauk (Kiyev)

Difficulties in the diagnosis of endocarditis combined with cerebral pathology. Vrach.delo no.6:633 Je '60.
(MIRA 13:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut klinicheskoy meditsiny im. akad. N.D. Strazhesko.
(ENDOCARDITIS) (BRAIN--DISEASES)

MAKARCHENKO, A.F., prof., otv. red.; KULIKOVSKIY, A.G., kand. med. nauk, red.; LITVAK, L.B., prof., red.; MIRTOVSKIY, N.V, prof., red.[deceased]; MINTS, A.Ya., kand med. nauk, red.; SLONIMSKAYA, V.M., prof., red.; SAVENKO, S.N., prof., red.; FRUMKIN, Ya.P., prof., red.; SHAROVSKIY, S.N., prof., red. [deceased]; BYKOV, N.M., tekhn. red.

[Problems in clinical neurology and psychiatry] Problemy klinicheskoi nevrologii i psikhiatrii. Kiev, Gos.med.izd-vo USSR, 1961. 308 p. (MIRA 14:12)

1. Ukrainskoye respublikanskoye obshchestvo nevropatologov i psikhiatrov. (NERVOUS SYSTEM—DISEASES) (MENTAL ILLNESS)

KULIKOVSKIY, A.G., kand.med.nauk (Kiyev)

Apropos prof. L.I.Gefter's article "Some critical comments concerning extensive diagnosis of rheumatic lesions of the brain." Vop.revm. 1 no.3:87-89 Jl-S '61. (MIRA 16:4)
(RHEUMATIC FEVER) (BRAIN--DISEASES)

ACC NR: AP6033200 SOURCE CODE: UR/0040/66/030/005/0822/0835

AUTHOR: Kulikovskiy, A. G. (Moscow)

ORG: none

TITLE: On stability of Poiseuille flow and several other plane parallel flows in a plane tube of great, but finite, length at high Reynolds numbers

SOURCE: Prikladnaya matematika i mekhanika, v. 30, no. 5, 1966, 822-835

TOPIC TAGS: pipe flow, plane flow, flow analysis, plane parallel flow, symmetric flow

ABSTRACT: This paper studies stability of plane-parallel flows in a plane tube of great, but finite, length at high Reynolds numbers on the basis of assumptions on the stability of uniform states. It is demonstrated that plane-parallel flows of convex symmetrical cross-section of unperturbed velocity are not entirely unstable. An example is plotted of an unstable flow with a velocity profile which has points of deflection. This paper examines the stationary flow of an incompressible viscous fluid in a tube of constant cross-section and of great length $L \leqslant x \leqslant L$. We will assume that the Reynolds number figured from the width of the channel is rather high. Except for sectors close to the ends of the finite tube the velocity profile may everywhere be regarded as Poiseuillean and independent of x. We call this the basic portion of the flow. We will assume that at the ends of tube $x = \pm L$ are exhibited certain boundary conditions (independent of time) which interconnect the perturbations of

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ACC NR: AP6033200

hydrodynamic magnitudes and their derivatives, while at each end the values of these magnitudes at the same end enter into the boundary conditions. An example is the condition that velocity perturbation is zero when $x = \pm L$. It may be considered fulfilled when the fluid flows in and out through the porous walls at the tube ends. Note that an essential condition of the setup examined is that the fluid flow in and out across the boundary of the region in question. The paper demonstrates that if the cross-section of unperturbed velocity is symmetrical ($U(-y) = U(y)$), convex ($U''(y) > 0$ with any y), and the Reynolds number is high enough unperturbed velocity is shown to involve entirely unstable flow. The author thanks S. V. Iordanskiy for discussion of the problems and I. Ye. Kireyeva for compiling the program of numerical computation. Orig. art. has: 29 formulas, 2 tables, 3 figures.

SUB CODE: 20/ SUBM DATE: 13May66/ ORIG REF: 005/ OTH REF: 006

Card 2/2

KULIKOVSKIY, A.S.

IVANKOV, L.I.; KULIKOVSKIY, A.S.; MLADENTSEV, G.D.; NARKELYUN, L.F.; FATIKOV, R.F.

Geological characteristics of the Dzhezkazgan deposit and new facts obtained by the mining geological service. Trudy Inst. geol. AN Kir. SSR no.9:253-263 '57. (MIRA 11:4)

(West Kazakhstan Province--Ore deposits)

KULIKOVSKIY, Anton Vikent'yevich; KAZACHENOK, V., red.; KALECHITS, G., tekhn.red.

[The most economical types of livestock buildings] Naibolee ekonomichnye tipy zhivotnovodcheskikh pomeshchenii. Minsk, Gos.izd-vo BSSR. Red.sel'khoz.lit-ry, 1960. 122 p. (MIRA 14:6)

(Farm buildings)

LUTSEVICH, P.A.; MONGALEV, G.F.; MIKHALEVICH, N.G.; ZINOVICH, K.F.; SAFRONENKO, A.P.; KLIMENKOV, P.A.; GAYDUKEVICH, N.M.; SILIN, M.S.; BRAZOVSKIY, P.V.; KOVPAK, M.D.; MELESHKEVICH, O.A.; KAMENTSEVA, V.N.; KULIKOVSKIY, A.V.; TARAYKOVICH, P.I.; ALEYNIKOV, G.A.; SHMULEVICH, Sh.S.; GRACHEVA, K.I.; NIKOLAYEVA, Yu.N.; VOLOKHOV, M.A.; DOMASHEVICH, O., red.; KARKLINA, E., red.; ZUYKOVA, V., tekhn. red.

[Manual for livestock raisers] Spravochnik zhivotnovoda. 2., dop. i perer. izd. Minsk, Gos.izd-vo sel'khoz.lit-ry BSSR, 1963. 462 p. (MIRA 16:8)

1. Glavnyy zootekhnik Upravleniya nauki Ministerstva sel'skogo khozyaystva Belorusskoy SSR (for Safronenko).
(Stock and stockbreeding)

KULIKOVSKIY, B.N. (g.Shelkovo)

Connecting the teaching of a chemistry course with work of students in school shops. Khim. v shkole 13 no.5:70-71 S-O '58. (MIRA 11:9)

(Chemistry--Study and teaching)

TROMEV, V.G.; KULIKOVSKIY, B.N.

Products of the Te oxidation by oxygen under pressure in water and aqueous solutions of NaOH. Zhur.neorg.khim. 7 no.9:2278-2280 S '62. (MIRA 15:9)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR.

(Tellurium oxide)

KULIKOVSKIY, B.N.; MIKHAYLOV, Yu.N.; KUZNETSOV, V.G.

X-ray diffraction study of the oxidation products of tellurium. Zhur. neorg. khim. 8 no.6:1338-1341 Je '63. (MIRA 16:6)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

(Tellurium) (Oxidation)
(X rays—Diffraction)

KULIKOVSKIY, B.N.; MIKHAYLOV, Yu.N.; TRONEV, V.G.

Products of the oxidation of Te by oxygen under pressure in aqueous solutions of KOH. Zhur.neorg.khim. 8 no.9:2088-2092 S '63. (MIRA 16:10)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

KULIKOVSKIY, B.N.; MIKHAYLOV, Yu.N.; TRONEV, V.G. [deceased]

Double orthotellurates. Zhur.neorg.khim. 10 no.12: 2814-2817 D '65. (MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

BARMIN, A.A. (Moskva); KULIKOVSKIY, G.A. (Moskva); [illegible], [illegible] (Moskva)

Linearized problem concerning supersonic flow at the inlet to the electrode zone of a magnetohydrodynamic channel. Prikl. mat. i mekh. 29 no.4:611-615 Jl-Ag '65. (MIRA 18:[illegible])

KULIKOVSKIY, G.V.

Relay circuit model. Avtom., telem. i sviaz' 8 no.12:20 D '64.
(MIRA 18:1)

1. Starshiy elektromekhanik 3-y distantsii Yugo-Zapadnoy dorogi.

CHERNYSHEV, M.P.; ROZHKOV, L.P.; SHUL'GINA, Ye.F.; IGNATOVICH, A.F.; LABUNSKAYA, L.S.; FOMINA, T.V.; CHERNYAKOVA, A.P.; SHPAKOVA, L.N.; TARASOVA, M.K.; ANFILATOVA, A.I.; SLAVIN, L.B.; BARYSHEVSKAYA, G.I.; DERIGLAZOVA, N.V.; MATUSHEVSKIY, G.V.; AL'TMAN, E.N.; KROPACHEV, L.N.; CHEREDILOV, B.F.; POTAPOV, A.T.; DUDCHIK, M.K.; REGENTOVSKIY, V.S.; YERMAKOVA, L.F.; SEMENOVA, Ye.A.; KULIKOVSKIY, I.I.; KIRYUKHIN, V.G.; AKSENOV, A.A., red.; NEDOSHIVINA, T.G., red.; SERGEYEV, A.N., tekhn. red.; BRAYNINA, M.I., tekhn. red.

[Hydrometeorological handbook of the Sea of Azov] Gidrometeorologicheskii spravochnik Azovskogo moria. Pod red. A.A.Aksenova. Leningrad, Gidrometeoizdat, 1962. 855 p. (MIRA 16:7)

1. Gidrometeorologicheskaya observatoriya Chernogo i Azovskogo morey.

(Azov, Sea of--Hydrometeorology)

VITTIKH, V.A.; GINZBURG, A.N.; KULIKOVSKIY, K.L.

Determining maximum angle of deflection of the movable part of an electrometer. Izv. SO AN SSSR no. 10. Ser. tekh. nauk no. 3:37-41 '65 (MIRA 19:1)

1. Institut avtomatiki i elektrometrii Sibirskogo otdeleniya AN SSSR, Novosibirsk. Submitted March 23, 1965.

ACC NR: AP6028702

SOURCE CODE: UR/0410/66/000/003/0128/0130

AUTHOR: Girgorovskiy, B. K. (Kuybyshev); Kulikovskiy, K. L. (Kuybyshev)

ORG: none

28
B

TITLE: The measurement of the components of complex voltages by a photoelectric comparator

SOURCE: Avtometriya, no. 3, 1966, 128-130

TOPIC TAGS: voltmeter, photoelectric detection, photoresistor

ABSTRACT: A method for the measurement of components of a complex voltage based on the photocompensation approach is described. The photosensitive element is incorporated within a comparator circuit (see Fig. 1). This photoelectrometric comparator is distinguished by a d-c output unit. It yields more accurate measurements and simplifies the determination of the complex voltage quadrant. The use of a 0.5 accuracy class milliampere instrument with a total

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UDC: 621.317.727.2

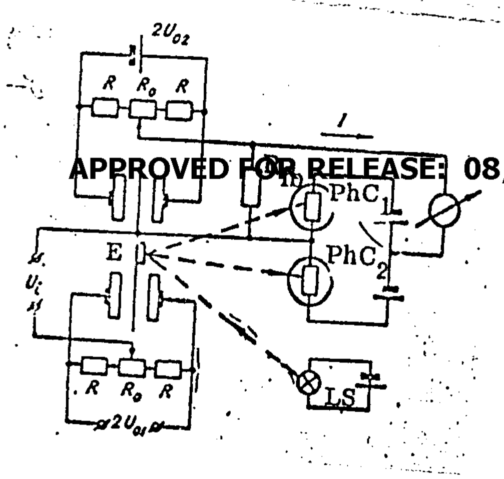

Figure 1. Photoelectrometric Comparator

E- electrometer sensor; Ph C_1 - photoresistance; LS- light source; R_{fb}- feedback resistance

5 ma deflection yielded errors not exceeding 1% in the 100-2000 mv region. Orig. art. has: 7 formulas, 1 table, and 1 figure.

SUB CODE: 09/ SUBM DATE: 04Nov65/ ORIG REF: 002/ OTH REF: 000

Card 2/2

Metrologiya i izmeritel'naya tekhnika (nd. vyp.. Aug. 5.32.935

phase vector meter

... force changes when the core is moved. Since sin φ and cos φ ...

L 11119-66

ACC NR: AP6002011 SOURCE CODE: UR/0288/65/000/003/0037/0041

AUTHOR: Vittikh, V. A.; Ginzburg, A. N.; Kulikovskiy, K. L.

14B

ORG: Institute of Automatic and Electrometry, Siberian Branch, AN SSSR (Institut avtomatiki i elektrometrii Sibirskogo otdeleniya AN SSSR)

TITLE: Determining the maximum deflection angle of the moving component of an electrometer

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 3, 1965, 37-41

TOPIC TAGS: electrometer, electrometric amplifier

ABSTRACT: Sensitivity of an electrometric amplifier depends, among other things, on the maximum permissible angle θ of deflection of the moving component of the electrometer; hence, increasing the electrometer range may result in considerably higher output of the amplifier. Formulas are developed which permit determining θ_{max} from a specified nonlinearity of the torque-deflection angle ratio; the torque curve is approximated by Chebyshev polynomials. A 9-step computation procedure is suggested. Orig. art. has: 20 formulas.

SUB CODE: 09 / SUBM DATE: 23Mar65 / ORIG REF: 002 / OTH REF: 001

Card 1/1 HW UDC: 621.317.745:621.317.723

BEDROV, G.I. [deceased]; MONICH, V.K. [deceased]; KULIKOVSKIY, K.T.; BRAZHENTSEVA, A.F.; PETROVA, M.P.; BALGOZHINA, A.G.

Intrusion of Toparsk complex in Shetskiy District of central Kazakhstan. Trudy Inst. geol. nauk AN Kazakh. SSR 12:43-73 '65. (MIRA 18:9)

KULIKOVSKIY, L. F., DOCENT

PA 55/49T43

USSR/Electricity May 49
Resistance
Instruments

"An Instrument for Direct Measurement of the Specific Resistance of Electrolytes," Docent L. F. Kulikovskiy, Cand Tech Sci, 2 pp

"Elektrichestvo" No 5

Author describes a direct-indicating instrument he developed to determine specific resistance of electrolytes. Gives principal schematic diagram and general view of instrument. Instrument has been utilized in petroleum industry to measure

USSR/Electricity (Contd) May 49

specific resistance of water occurring below petroleum layers. Submitted 13 Jan 49.

55/49T43

KULIKOVSKIY, L. F., Engr.

PA 167T30

USSR/Electricity - Measuring Instruments Coatings, Nonmagnetic — Aug 50

"Measuring the Thickness of Nonmagnetic Coatings," L. F. Kulikovskiy, Engr, A. M. Melik-Shakhnazarov, Engr, Baku

"Elektrichestvo" No 8, pp 67-70

Discusses practical application of equipment with ferrodynamic measuring instrument for direct measurement of thickness of nonmagnetic coatings on magnetic bases. Describes properties of induction transmitting element. Gives theory of instrument's

167T30

USSR/Electricity - Measuring Instruments (Contd) — Aug 50

operation and data on parts. Conclusions can be used in developing measuring circuits with phase-sensitive devices.

167T30

[illegible], L. F.

"Inductive Instruments for Measuring EMF's and the Practice of [illegible] in the Petroleum Industry." Sub 24 Mar 51, Inst of Automatics and Telemechanics, Acad Sci USSR

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55.

[illegible], [illegible]

Elec rical measuring instruments for controlling the process of boring Moskva Gos. nauchnotekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1952. 153 p. (53-18812)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430003-3"

KULIKOVSKIY, L

"Science in the Service of the National Economy," Sovetskaya Litva, 21 May 1953.

Dr. Tech. Sci., Director of the Kaunas Polytechnic Inst.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430003-3"

KULIKOVSKII, L.; DRECHSLER, R.

Induction vector meters. p. 395. (ELEKTROTECHNICKY OBZOR, Vol. 46, No. 8, Aug 1957, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

[illegible], B.T., [illegible] Industrial Polytechnic Institute, and co-workers

"Achievements concerning measuring amplifiers" (Section VII)
"Photoelectric amplifiers" (Section VII)

report submitted for Measurement and Automation, Scientific Society for (Hungarian) Intl Measurements Conference - Budapest, Hungary, 24-30 Nov 58

KULIKOVSKIY, L.F., prof., doktor tekhn.nauk; VIDMANOV, Yu.D.,
assistent

Photoelectrometer amplifier and its use. Izv.vys.ucheb.zav.;
prib. no.5:37-45 '58. (MIRA 12:6)

1. Kuybyshevskiy industrial'nyy institut im. V.V. Kuybysheva.
(Photoelectric measurements)

KULIKOVSKIY, L.F.

SOV/144-58-9-18/18

AUTHOR: Gikis, A. F., Candidate of Technical Sciences, Docent

TITLE: Inter-University Scientific Conference on Electric Measuring Instruments and Technical Means of Automation (Mezhvuzovskaya nauchnaya konferentsiya po elektroizmeritel'nym priboram i tekhnicheskim sredstvam avtomatiki)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, 1958, Nr 9, pp 130-135 (USSR)

ABSTRACT: The conference was held at the Leningradskiy elektrotekhnicheskiy institut imeni V. I. Ul'yanova (Lenina) (Leningrad Electro-technical Institute imeni V. I. Ul'yanov (Lenin)) on November 11-15, 1958. The representatives of eleven higher teaching establishments and three research institutes participated and a large number of specialists of various industrial undertakings were present.

Docent A. S. Rozenkrants (Ivanovo Power Institute imeni V. I. Lenin) in his paper "Automatic a.c. bridges and compensators" emphasized the acute demand for automatic instruments for comparing alternating currents. The fields of application of such instruments could be considerably extended if they would be designed for operating at a wider frequency range. He considered it

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advisable to base the automation of such comparison instruments on using a phase sensitive indicator and has described a bridge of this type which was built at the Ivanovo Power Institute.

Yu. A. Skripnik (Kiyev Polytechnical Institute) reported on a phase sensitive switch indicator of semi-equilibrium of a.c. bridges.

Professor L. F. Kulikovskiy (Kuybyshev Industrial Institute imeni V. V. Kuybyshev) presented a paper on "Some new types of a.c. compensators".

Assistant Ya. I. Tonyakov (Novocherkassk Polytechnical Institute imeni S. Ordzhonikidze) presented the paper "Certain problems of designing automatic d.c. potentiometers of high accuracy with numerical reading off".

103-19-3-9/9

AUTHORS: Kol'tsov, A. A., Kulikovskiy, L. F. (Kuybyshev)

TITLE: A Telemetering Compensation Device for Linear Displacements (Telemetricheskoye kompensatsionnoye ustroystvo lineynykh peremeshcheniy)

PERIODICAL: Avtomatika i Telemekhanika, 1958, Vol. 19, Nr 3, pp. 280-284 (USSR)

ABSTRACT: One of the many possibilities for the use of a ferrodynamic measuring mechanism with independent excitation and rectilinear displacement of the mobile part is the application of two such measuring mechanisms in one set. This set is a telemetering apparatus for the measurement of small and large displacements or of other quantities convertible into these displacements. An induction servosystem of linear displacements is investigated here which can be used in automation and in remote control. The measuring mechanism was suggested by L. F. Kulikovskiy and A. A. Kol'tsov and worked out The test sample was produced in the Laboratory of the Chair for "Automatic, Remotely Controlled and Measuring Instruments and Devices" in the Institute of the Industry, Kuybyshev. A short theory of the system and the technical

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data of the construction are given. The experiments on the model of the apparatus showed high efficiency of the magnetic circuit. The factor of utilization of the magnetic flow was equal to 0,7. There are 7 figures and 1 reference which is Soviet.

SUBMITTED: May 31, 1957

14(5), 28(1) SOV/152-59-1-27/31

AUTHORS: Kulikovskiy, L. F., Kol'tsov, A. A., Tsiber, A. L.

TITLE: Automatic Recording of the Product-volume in the Distillation of Light Petroleum Products (Avtomaticheskaya registratsiya ob"yema produkta razgonki svetlykh nefteproduktov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, 1959, Nr 1, pp 105 - 111 (USSR)

ABSTRACT: The researchers f the Kuybyshevskiy neftepererabatyvayushchiy zavod (Kuybyshev Petroleum Refinery) (Ref 1) constructed an apparatus for the automatic and accelerated distillation of light oil products. This apparatus draws samples in prescribed intervals, distils and records the temperature prevailing during steam generation as a function of time. The researchers of the chair for Avtomaticheskiye, telemekhanicheskiye i izmeritel'nyye pribory i ustroystva (Automatic, Telemechanic and Measuring Instruments and Devices of the Kuybyshe Industrial Institute) developed a device for automatic measuring and recording of volume of distillation products as a function of temperature. This device is used

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Automatic Recording of the Product-volume in the Distillation of Light Petroleum Products SOV/152-59-1-27/31

in conjunction with the apparatus for an accelerated distillation. An apparatus equipped with such a device is located directly at the place of sample taking where it makes a perfect automation of the crude benzine quality control possible. This apparatus reduces the time required for inspection and increases the accuracy of control. In addition, the number of persons required for operating can be reduced. Based on figure 1, operation of the device is illustrated and a detailed description is given. An inspection carried out under operating conditions gave proof of its reliability during operation. The advantage of this device is the fact that, when used in conjunction with an automatic electronic potentiometer, the latter will not have to be rebuilt. Other compliances constructed for similar purposes by other organisations (Refs 2,3) do not offer this advantage. The device can be employed also whenever an other quantity, (apart from temperature), which is also a function of temperature is to be recorded. There are 7 figures and 3 Soviet references.

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Automatic Recording of the Product-volume in the Distillation of Light Petroleum Products SOV/152-59-1-27/31

ASSOCIATION: Kuybyshevskiy industrial'nyy institut im. V. V. Kuybysheva (Kuybyshev Industrial Institute imeni V. V. Kuybyshev)

SUBMITTED: September 26, 1958

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Kulikovskiy, L.F.

8(2), 9(6)

AUTHOR: Anisimov, V. I., Engineer SOV/119-59-3-13/15

TITLE: The Inter-university Scientific Conference on Electrical Measuring Instruments and on the Technical Means of Automation (Mezhvuzovskaya nauchnaya konferentsiya po elektroizmeritel'nym priboram i tekhnicheskim sredstvam avtomatiki)

PERIODICAL: Priborostroyeniye, 1959, Nr 3, pp 30-31 (USSR)

ABSTRACT: This Conference was held at the Leningradskiy elektrotekhnicheskiy institut im. V. I. Ul'yanova (Lenina) (Leningrad Institute of Electrical Engineering imeni V. I. Ul'yanov (Lenin)) in November 1958. It was attended by more than 500 representatives of universities, scientific research institutes, of the OKB, the SKB (Special Design Office), of industries and other organizations. More than 30 lectures were delivered in the meetings of this Conference. In opening the conference N. P. Boroditskiy underlined the outstanding importance of automation and of measuring technique for the development of national economy. N. N. Shumilovskiy in his lecture reported on "The Trends in the Development of Methods of Radioactive Control of Production Data" and outlined the extensive

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possibilities of using radioactive methods in such control. Ye. G. Shramkov and S. A. Spektor reported on a new method of measuring heavy direct currents with the help of the nuclear magnetic resonance. M. A. Rozenblat investigated problems of the application of magnetic amplifiers in automation and in measuring technique. A. V. Fateyev reported on the present-day state on the prospects of automatic control technique. Ya. Z. Tsypkin investigated some peculiar features of and the prospects offered by automatic pulse systems. The lecture by N. G. Boldyrev dealt with problems of stability of discrete automatic systems. V. B. Ushakov discussed the main trends in the development of mathematical analog computers and of computers designed for industrial use. The report by V. S. Ryabyshkin deals with an electronic analog correlator for the calculation of correlation functions in the investigation of winds in the ionosphere. R. I. Yurgenson reported on the most important methods, which guarantee both an active and passive freedom from disturbances in

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discrete selective systems. Ya. V. Novosel'tsev discussed problems of averaging, differentiation, and balancing of time-dependent functions which can be represented by electric signals. V. P. Skuridin investigated new computing devices with polarized relays. A. V. Frenke and Ye. M. Dushin reported on instrument transformers for automatic instruments with automatic recording. V. B. Ushakov and N. N. Kopay-Gora reported on a computer for the automatic centralized control of production specifications. K. M. Fetisov discussed fundamental problems of the theory of automatic measuring instruments with an inverse conversion for the measurement of non-electric quantities. Ye. I. Tenyakov dealt with problems of the construction of automatic d. c. potentiometers with high accuracy. D. I. Malov discussed a high-precision automatic d. c. bridge for digital computations. The participants in the Congress listed below discussed the following subjects (which, however, are not given by the exact wording of the titles): V. A. Ivantsov: The planning of measuring elements for

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The Inter-university Scientific Conference on Electrical Measuring Instruments and on the Technical Means of Automation SOV/119-59-5-13/15

accurate automatic quotient-type meters in digital computations. R. R. Kharchenko: Methods of determining the dynamic errors of a magnetic oscilloscope by simulation. P. P. Ornatskiy: Problems in measuring electric quantities at extremely low frequencies by electrical indicating instruments of various systems. L. F. Kulikovskiy: Novel types of a. c. compensators. A. S. Rozenkrants: Automatic bridges and a. c. compensators suited for the control of the parameters of condensers in series production. L. I. Stolov: Some characteristics of midget induction motors which can be used in measuring technique and automation. D. A. Borodayev: Ultrasonic pressure- and liquid level gages. Yu. A. Skripnik: The circuitry of a phase-sensitive commutation indicator for a. c. semi-equilibrium bridges. N. P. Suvid: The application of instruments with magnetic bridges, which permit a considerable simplification of the design of the apparatus and the circuitry used in the measurement of non-electric quantities. V. A. Ferents: Method of increasing the sensitivity of oxygen gas analyzers. P. V. Novitskiy:

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Design of apparatus for measuring vibration quantities. V. V. Pasynkov: Main types of non-linear semiconductor resistors and possibilities of their application to circuitry in automation and measuring technique. G. N. Novopashennyy: Development of measuring amplifiers with semiconductor triodes. Ya. V. Novosel'tsev, N. A. Smirnov, Ye. Ye. Afanas'yev, Ye. P. Ugryumov: Precision semiconductor frequency meter operating according to the pulse-counting principle. P. G. Nikitin and A. Bezukladnikov: Methods of measuring the magnetic field strength by means of bismuth resistors and transducers operating on the Hall effect principle. A resolution was adopted by the closing plenary meeting of the Conference, which indicates ways of improving and coordinating scientific research work in the field of automation, electric measuring- and computing technique.

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8(2)

AUTHORS: ~~Kulikovskiy, L. F.,~~ Doctor of Technical Sciences, Professor, Melik-Shakhnazarov, A. M., Candidate of Technical Sciences, Docent SOV/119-59-5-3/22

TITLE: The Automatic Regulation of the Intensity of Alternating Current by an Electrostatic Comparator (Avtomaticheskaya ustanovka velichiny peremennogo toka elektrostaticheskim komparatorom)

PERIODICAL: Priborostroyeniye, 1959, Nr 5, pp 7-8 (USSR)

ABSTRACT: The use of voltage stabilizers with a high stabilizing coefficient in the d.c. and a.c. compensators with hand control requires an increase in accuracy of the stabilizers. The operating personnel need not periodically regulate the operating current, thus increasing the rate of the measuring process. The accuracy of stabilizers can easily be increased by means of a current circuit in which an electrostatic comparator is installed. This comparator consists of a differential electrostatic sensitive element, a source of a stable constant tension, a battery of normal elements, and a photomultiplier. The mode of operation of the electrostatic sensitive element and the corresponding equations are briefly discussed. A drawback of the device discussed here is a certain complicacy caused by the servomechanism for the regulation of the

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The Automatic Regulation of the Intensity of Alternating Current by an Electrostatic Comparator SOV/119-59-5-3/22

resistor. Also the very construction of this resistor increases the complicacy. The resistor consists of a cylindrical element with a wire attached to it on which a contact is shifted. The shortcomings just pointed out are avoided in another device discussed here. This device was already built and tested. In this new device, the plates in the electrostatic differential apparatus are arranged vertically. The most important technical data of this device are as follows: voltage of the battery 15 v, alternating voltage $U_{\sim}$= 150 to 250 v, photoresistor of the FS-K2 type. At a change in the voltage $U_{\sim}$ within the limits 150-250 v, the current intensity varied by $\pm$0.1% at the most, which is, however, by no means the limit of efficiency of this device. With the use of stabler photoresistors, the current intensity can be kept constant even better. The above-mentioned electrostatic differential device was developed by A. M. Melik-Shakhnazarov and Yu. I. Vidman. There are 2 figures and 3 Soviet references.

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